

CLAIMS

What is claimed is:

1. A retainer for printed circuit board assemblies, comprising:  
a heat-shrinkable member, said heat-shrinkable member being configured to receive a  
5 coupling member extending from a component; and  
a retaining member, said retaining member being coupled with said heat-shrinkable  
member.
2. The retainer of Claim 1, wherein said component is assembled on a printed circuit  
board.
- 10 3. The retainer of Claim 2, wherein said printed circuit board forms an opening, said  
heat-shrinkable member being configured to receive said coupling member via said opening.
4. The retainer of Claim 3, wherein said coupling member is configured to be  
received within said opening.
- 15 5. The retainer of Claim 3, wherein said heat-shrinkable member is configured to be  
received within said opening.
6. The retainer of Claim 2, wherein said coupling member is coupled with said  
component before said component is assembled on said printed circuit board.
- 20 7. The retainer of Claim 2, wherein said component is assembled on one side of said  
printed circuit board, and said retaining member is substantially adjacent to an opposite side of  
said printed circuit board.

8. The retainer of Claim 2, wherein said printed circuit board is disposed substantially between said retaining member and said component.

9. The retainer of Claim 2, wherein said heat-shrinkable member is sufficiently laterally flexible to permit a surface tension of liquefied solder to substantially guide a substantially horizontal alignment of said component during assembly.

10. The retainer of Claim 1, wherein said heat-shrinkable member is configured to activate at a temperature that is less than or substantially equal to a typical solder reflow temperature.

11. The retainer of Claim 1, wherein said heat-shrinkable member is configured to resist decomposition at a temperature that is greater than a typical solder reflow temperature.

12. The retainer of Claim 1, wherein said heat-shrinkable member includes a channel to receive said coupling member.

13. The retainer of Claim 12, wherein said heat-shrinkable member comprises heat-shrinkable tubing.

14. The retainer of Claim 1, wherein said heat-shrinkable member is configured to shrinkably engage said coupling member when exposed to a temperature that is less than or substantially equal to a typical solder reflow temperature.

15. The retainer of Claim 1, wherein said retaining member is formed from a heat-resistant material.

16. The retainer of Claim 15, wherein said heat-resistant material is configured to remain functionally stable at a temperature that is greater than or substantially equal to a typical solder reflow temperature.

17. The retainer of Claim 1, wherein said retaining member includes an extension,  
5 said retaining member being coupled with said heat-shrinkable member via said extension.

18. The retainer of Claim 1, wherein said retaining member forms an aperture, said heat-shrinkable member being disposed substantially within said aperture.

19. A retainer for printed circuit board assemblies, comprising:  
at least one heat-shrinkable member, said at least one heat-shrinkable member each being  
10 configured to receive a coupling member extending from a component assembled on a printed circuit board via an opening formed in said printed circuit board; and  
a retaining member, said retaining member being coupled with each of said plurality of heat-shrinkable members.

20. The retainer of Claim 19, wherein a second coupling member extends from said  
15 component, and at least one of said at least one heat-shrinkable member is configured to receive said second coupling member via a second opening formed in said printed circuit board.

21. The retainer of Claim 19, wherein a second component is assembled on said printed circuit board, and at least one of said at least one heat-shrinkable member is configured to receive a coupling member extending from said second component via a second opening  
20 formed in said printed circuit board.

22. The retainer of Claim 19, wherein at least one of said at least one heat-shrinkable member is configured to shrinkably engage at least one of said at least one coupling member when exposed to a temperature that is less than or substantially equal to a typical solder reflow temperature.

5 23. A retainer for printed circuit board assemblies, comprising:  
a retaining member, said retaining member having at least one coupling member, said at least one coupling member each extending from said retaining member; and  
a heat-shrinkable member, said heat-shrinkable member being coupled with a component assembled on a printed circuit board and being configured to receive at least one of said at least  
10 one coupling member via an opening formed in said printed circuit board.

24. The retainer of Claim 23, wherein a second heat-shrinkable member is coupled with said component, said second heat-shrinkable member being configured to receive at least one of said at least one coupling member via a second opening formed in said printed circuit board.

15 25. The retainer of Claim 23, wherein a second component is assembled on said printed circuit board and is coupled with a heat-shrinkable member, said heat-shrinkable member of said second component being configured to receive at least one of said at least one coupling member via a second opening formed in said printed circuit board.

20 26. The retainer of Claim 23, wherein said heat-shrinkable member is configured to shrinkably engage at least one of said at least one coupling member when exposed to a temperature that is less than or substantially equal to a typical solder reflow temperature.

27. A method for retaining assembled components, comprising:  
providing a printed circuit board having an opening;  
assembling a component having a coupling member onto said printed circuit board;  
receiving said coupling member with a heat-shrinkable member via said opening; and  
shrinkably engaging said coupling member with said heat-shrinkable member.

28. The method of Claim 27, wherein assembling said component includes reflowing  
said component onto said printed circuit board.

29. The method of Claim 27, wherein assembling said component includes applying  
solder paste onto said printed circuit board and positioned said component onto said printed  
circuit board.

30. The method of Claim 27, wherein assembling said component includes  
substantially horizontally aligning said component via a surface tension of liquefied solder.

31. The method of Claim 27, wherein said printed circuit board is a double-sided  
printed circuit board.

32. The method of Claim 27, wherein receiving said coupling member with said heat-  
shrinkable member includes receiving said coupling member via said opening.

33. The method of Claim 27, wherein receiving said coupling member with said heat-  
shrinkable member includes receiving said heat-shrinkable member via said opening.

34. The method of Claim 27, wherein receiving said coupling member with said heat-  
shrinkable member includes forming a channel in said heat-shrinkable member.

35. The method of Claim 34, wherein forming said channel includes forming said channel as said coupling member is being received by said heat-shrinkable member.

36. The method of Claim 27, wherein receiving said coupling member with said heat-shrinkable member includes disposing said printed circuit board substantially between said component and a retaining member, said retaining member being coupled with said heat-shrinkable member.

37. The method of Claim 27, wherein shrinkably engaging said coupling member includes activating said heat-shrinkable member at a temperature that is less than or substantially equal to a typical solder reflow temperature.

38. The method of Claim 27, further comprising inverting said printed circuit board and reflowing said inverted printed circuit board.

39. The method of Claim 38, further comprising applying solder paste onto said inverted printed circuit board and positioning at least one other component onto said inverted printed circuit board.

40. The method of Claim 38, wherein reflowing said inverted printed circuit board includes substantially maintaining a position of said component on said printed circuit board substantially via said heat-shrinkable member.

41. The method of Claim 40, wherein substantially maintaining said position of said component includes substantially inhibiting said component from separating from said printed circuit board.

42. The method of Claim 41, wherein substantially maintaining said position of said component includes inhibiting said component from becoming substantially misaligned with at least one mounting surface on said printed circuit board.